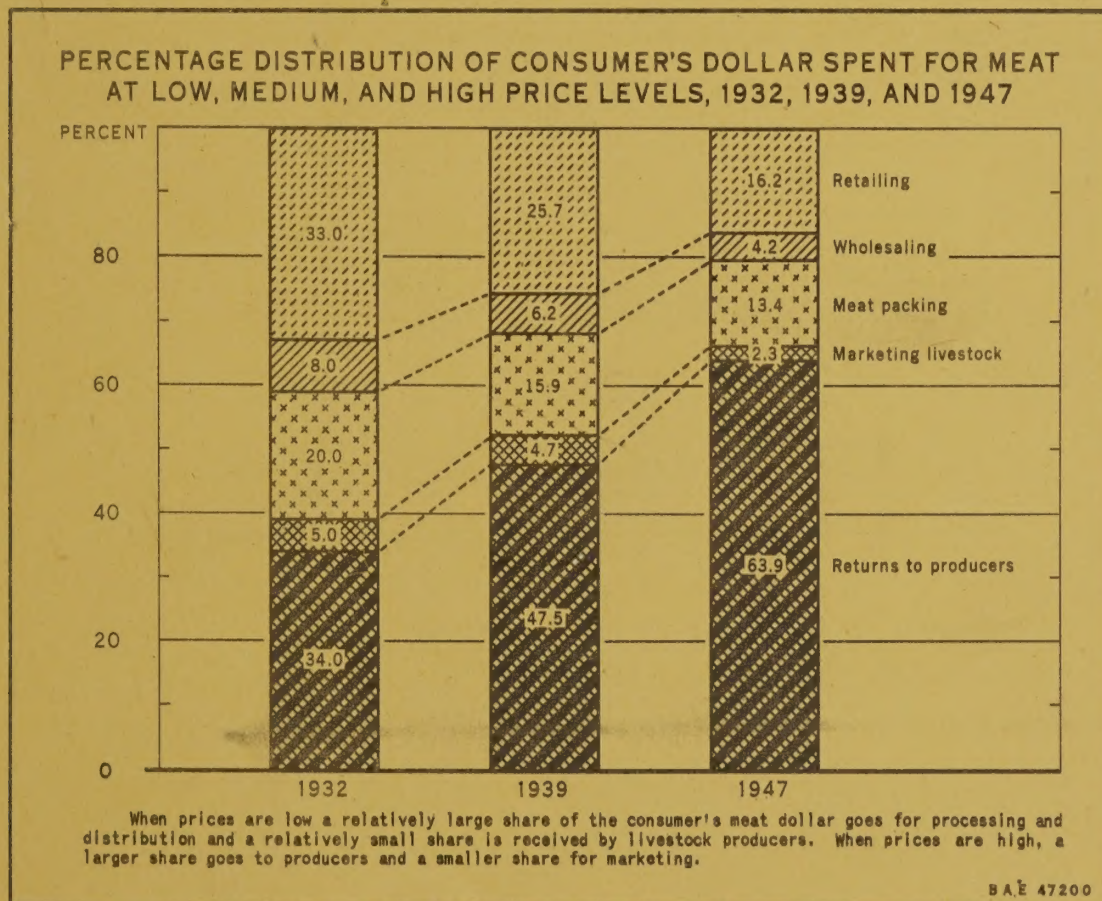


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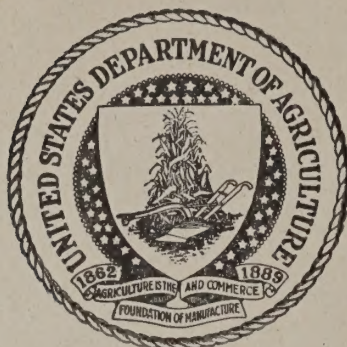
# FARM-TO-RETAIL MARGINS FOR *Livestock and Meat*



WASHINGTON, D. C.  
JUNE 1949



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:                   Research and Marketing Act of 1946.                                           :  
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## FARM-TO-RETAIL MARGINS FOR LIVESTOCK AND MEAT 1/ 2/

By Kathryn Parr, Agricultural Economist

Meat and meat products normally account for approximately a fourth of the cost of all farm food bought by consumers. During 1947 and 1948 the proportions were more nearly a third of the total. How is the consumer's dollar spent for meat distributed among producers and marketing agencies? And does that distribution remain the same when prices are low and when they are high? These questions are of interest to both producers and consumers of meat.

A previous report of this Bureau shows the distribution of the consumer's dollar among producers and those performing marketing functions, and among cost items, for the prewar year 1939, which represents a "normal" peacetime year. <sup>3/</sup> This report compares the distribution of the consumer's dollar for meat in 1932, when prices of livestock and meat were low, and in 1947 when prices were high, with the distribution in 1939.

So that the reader may have a better idea of some of the factors that affect marketing margins and changes in margins for livestock and meat, the report also includes brief discussions of the more important cost factors in marketing, <sup>4/</sup> dressing yields, relationships between the weights and between prices of various cuts of meat, and relationships of prices of cuts to prices of live animals. Presentation of margins by species of livestock is limited mainly to over-all margins because of lack of data for breaking down the margins among marketing functions.

### DISTRIBUTION OF CONSUMER'S MEAT DOLLAR AT THREE SELECTED PRICE LEVELS

The distribution of the consumer's dollar spent for meat among producers and those performing marketing functions differs when prices of livestock and meat are at different levels. The distributions that show margins for marketing functions and returns to producers were determined for three periods 1932, 1939, and 1947, when prices were distinctly different.

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<sup>1/</sup> A study of expenses of marketing livestock, for the same years as this study, was reported on by Edmund Farstad in the Marketing and Transportation Situation, issued by the Bureau of Agricultural Economics in March 1949.

<sup>2/</sup> Knute Bjorka, Agricultural Economist, Bureau of Agricultural Economics, was consulted in planning the project, analysing the data and preparing the report.

<sup>3/</sup> Bjorka, Knute. Marketing Margins and Costs for Livestock and Meat, U.S. Dept. Agr. Tech. Bul. 932, 102 pp. illus. 1947.

<sup>4/</sup> Marketing, as used in this report, includes all stages in the marketing process from the livestock producer to the consumer of meat and meat products.



### Distribution by Marketing Functions

In 1932, when the average retail price of meat was 20.0 cents a pound, the total marketing margin was 66.0 percent of the consumer's meat dollar (cover chart). In 1939, when the average price of meat was 24.4 cents a pound, the percentage margin declined to 52.5 percent. In 1947, when the retail price of meat averaged 55.4 cents a pound, the total margin was 36.1 percent of the consumer's dollar. The decreasing percentage margin in 1939, and again in 1947, resulted from the fact that prices of meat had increased relatively more from one period to the next than the margin in cents per pound taken for performing the combined functions of marketing.

The total marketing margin for livestock and meat, expressed in cents per pound of meat sold at retail, declined from 13.2 in 1932 to 12.8 in 1939 (fig. 1 and table 1). It increased to 20.0 cents per pound of meat sold in 1947. The relatively high marketing margin in 1947 resulted from general increases in the cost factors involved in performing the various marketing functions.

### DISTRIBUTION OF THE AVERAGE RETAIL PRICE PER POUND OF MEAT AT LOW, MEDIUM, AND HIGH PRICES, 1932, 1939 AND 1947

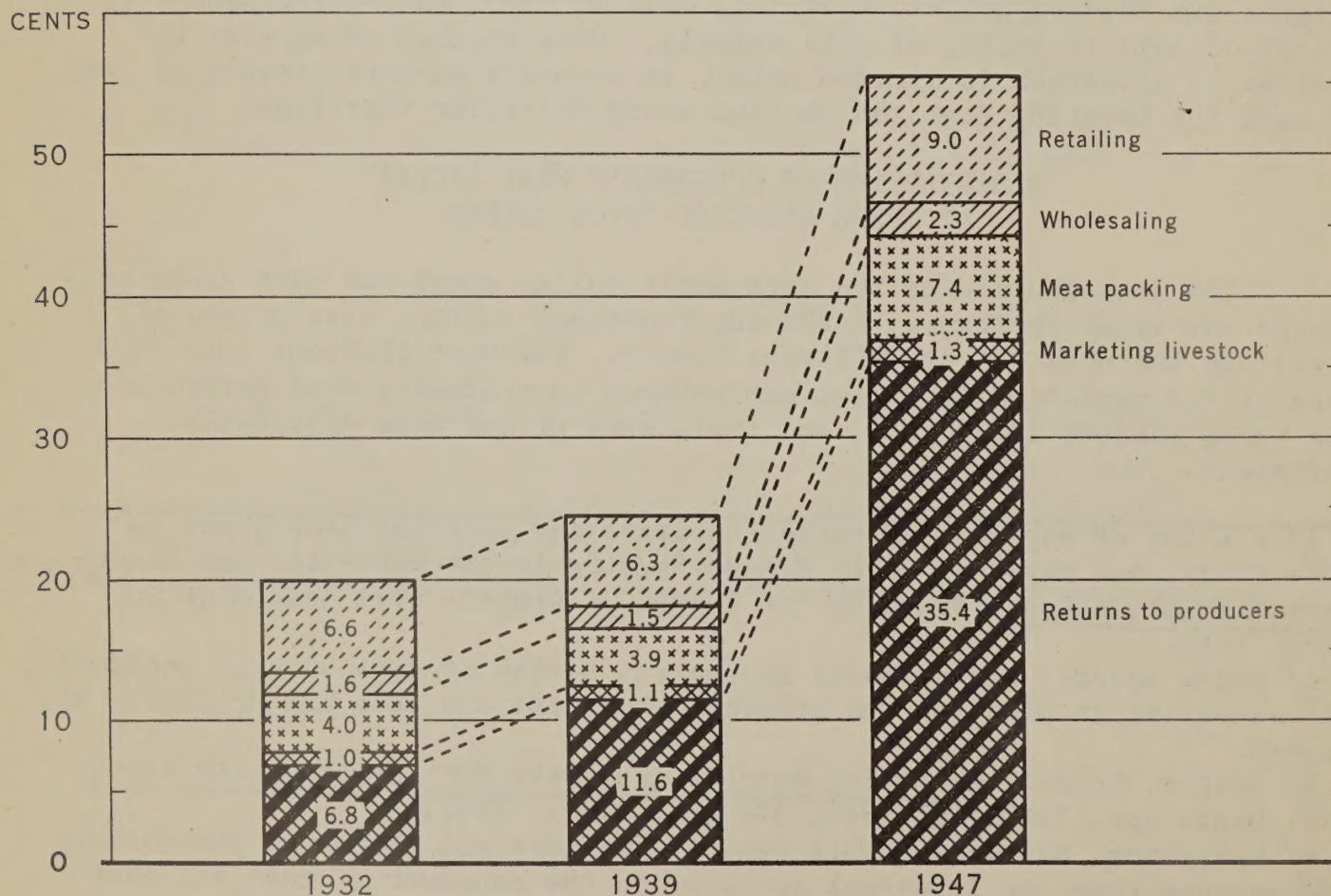


FIGURE 1

Marketing charges for processing and distribution of meat are relatively more stable than are prices of meat and meat animals. Therefore, producers receive a greater part of the price paid by consumers for meat in periods of high prices than when prices are low.



Table 1.--Distribution of consumer's meat dollar and of average retail price of meat, by marketing functions, 1932, 1939, and 1947

Function	Consumer's meat dollar			Retail price per pound		
	1932	1939	1947	1932	1939	1947
	:	1/	:	:	1/	:
	Percent	Percent	Percent	Cents	Cents	Cents
Retail distribution.....	33.0	25.7	16.2	6.6	6.3	9.0
Wholesale distribution ..	8.0	6.2	4.2	1.6	1.5	2.3
Meat packing .....	20.0	15.9	13.4	4.0	3.9	7.4
Marketing of livestock <sup>2/</sup>	5.0	4.7	2.3	1.0	1.1	1.3
Total marketing margin ..	66.0	52.5	36.1	13.2	12.8	20.0
Returns to producers .....	34.0	47.5	63.9	6.8	11.6	35.4
Total .....	100.0	100.0	100.0	20.0	24.4	55.4

<sup>1/</sup> Revised total spread for all meat distributed among functions according to the distribution shown in Marketing Margins and Costs for Livestock and Meat, p. 12. See footnote 3.

<sup>2/</sup> 1932 and 1947 based on data from The Expenses of Marketing Livestock, 1947 Compared with 1932 and 1939. See footnote 5

Margins for marketing are broken down into the broad functions of marketing livestock, meat packing (including processing), and wholesale and retail distribution of meat. The margin for marketing livestock was 1.0 cents a pound of meat in 1932, 1.1 cents a pound in 1939, and 1.3 cents a pound in 1947. <sup>5/</sup> The increases in expense of marketing livestock were partly compensated for by larger proportions of livestock sold direct for which marketing expenses were not assessed. The increased margin in 1947 resulted from increases both in expenses at markets and transportation. Expressed as percentages of the consumer's dollar for meat, the margin for marketing livestock was 2.3 percent in 1947, compared with 4.7 percent in 1939 and 5.0 percent in 1932. The small percentage in 1947 was accounted for by the high prices for livestock and meat that year.

When expressed in cents per pound of meat sold the margins in 1932 and 1939 for each of the marketing functions of retailing, wholesaling and meat packing differed very little. The fact that data for 1932 were less complete, and apparently less reliable, may have caused estimates of margins for performing these functions to be relatively large in that year. However, the margin for retailing meat probably narrowed between 1932 and 1939 owing to expansion in chain-store distribution. Whether meat packing and wholesaling margins declined as a result of increased efficiencies cannot be determined. The marked increase in the margins per pound of meat for retailing, wholesaling, and meat packing from 1939 to 1947 resulted from

<sup>5/</sup> Farstad, Edmund, The Expenses of Marketing Livestock, 1947, Compared with 1932 and 1939, U.S. Bur. of Agr. Econ., Marketing and Transportation Situation, March 1949, pp. 11-19.



general increases in operating costs. As percentages of the consumer's meat dollar, the margins for each of these marketing functions declined from 1932 to 1939 and they declined still further in 1947.

When prices are low, a relatively large share of the consumer's meat dollar goes for processing and distribution and a relatively small share is received by producers. When prices are high, a larger share goes to producers and a smaller share for marketing. In 1932, producers received 34.0 percent of the amount paid by consumers for meat (cover chart). In 1939 the producers received 47.5 percent, compared with 63.9 percent in 1947.

The price received by farmers for normal supplies of livestock is determined chiefly by the amount consumers are willing and able to pay for meat (and for the byproducts of livestock slaughter), with the expenses of marketing deducted. When consumer purchasing power is high and supplies are normal (or small), prices of both meat and livestock are likely to be high. On the other hand, when purchasing power is low, and supplies are normal (or large) prices are low. Livestock prices, like prices received by farmers for other food products, tend to vary more over given periods than do prices of meat. Producer's received 35.4 cents per pound of meat in 1947 compared with 11.6 cents in 1939 and 6.8 cents in 1932.

No attempt has been made in this report to determine the relative amounts of marketing services performed by producers in the 3 years, nor to estimate the cost to producers for performing such services.

The percentage distribution of the total marketing margin among the various marketing functions in 1932 and 1939 showed much similarity (table 2). About one-half of the total margin was for retailing, and 30 percent

Table 2.--Distribution of the total marketing margin for meat among marketing functions, 1932, 1939, and 1947

Marketing function	1932	1939	1947
	Percent	Percent	Percent
Retail distribution .....	50.0	49.0	44.9
Wholesale distribution .....	12.1	11.8	11.6
Meat packing .....	30.3	30.3	37.1
Marketing of livestock .....	7.6	8.9	6.4
Total margin .....	100.0	100.0	100.0



was for meat packing. Wholesaling took about 12 percent and marketing of livestock about 8 percent. In 1947, meat packing took a relatively greater proportion of the total marketing margin than in either of the earlier years, and retailing and marketing of livestock received smaller proportions. The distribution of the total margin in 1947 was: Retail distribution, 44.9 percent; wholesale distribution, 11.6 percent; meat packing, 37.1 percent; and marketing of livestock, 6.4 percent.

#### Distribution by Cost Items

Wages and salaries (exclusive of wage-and-salary cost in transportation) accounted for 21.5 percent of the consumer's dollar spent for meat in 1947. This compared with 27.9 percent of the consumer's dollar so spent in 1939. Transportation cost amounted to 3.2 in 1947 and 5.9 percent in 1939. Other costs, which cannot be reported separately, accounted for 11.4 percent of the consumer's meat dollar in 1947 compared with 18.7 percent in 1939. Comparisons with 1932 cannot be made as data for distributing the margin among cost items are not available for that year.

#### Computation of Margins <sup>6/</sup>

The total or over-all margin for all meat, as used in this report, is the total spread between the average retail price paid by consumers for meat and the net farm value of equivalent quantities of livestock sold by producers. The net farm value was obtained by subtracting from the gross farm value of equivalent quantities of livestock the imputed value of nonfood byproducts such as hides, pelts, tankage, and fertilizer materials, and nonmeat edible byproducts, such as oleo oil (see Appendix, p. 33)

The break-down of the over-all margins for 1947 and 1932 were estimated by use of data from the American Meat Institute, data from trade journals, wholesale-retail price spreads in New York and Chicago and other data available in the Department of Agriculture. Distribution of the consumer's meat dollar among marketing functions and among cost items in 1939 is based on a report of this Bureau issued in 1947. <sup>7/</sup>

#### FACTORS AFFECTING MARGINS WHEN PRICES ARE AT DIFFERENT LEVELS

Among factors that affect costs and margins in the marketing of livestock and meat are wage rates, productivity of labor, overhead costs, volume produced, cost of supplies and containers, extent of processing, transportation costs, etc. It is not the purpose of this report to give a detailed explanation of reasons for the differences in marketing margins

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<sup>6/</sup> The over-all spreads are revisions of price spreads published by the Bureau of Agricultural Economics in Price Spreads between Farmers and Consumers for Food Products, 1913-44, U.S. Dept. Agr. Misc. Pub. 576, 1945, and supplementary data.

<sup>7/</sup> Revised over-all spreads were distributed according to the distribution shown in publication. See footnote 3, page 1.



in the 3 years shown. Rather the report points out some of the important factors which may cause margins in the future to differ from those shown, even though the price levels of those years prevail. Rigidity of certain marketing charges may leave less for producers in case of a drop in retail prices.

### Cost Factors

#### Labor

Cost of labor, which is affected by both wage rates and productivity of labor is the chief item of expense for marketing. Average weekly earnings of production workers in the slaughtering and meat packing industry were \$55.31 in 1947, compared with \$27.85 in 1939 (table 3). From 1939 to 1947 weekly earnings almost doubled, but a part of this increase was due to an increase in number of hours worked per week. Hourly earnings were \$1.245 in 1947 and 68.6 cents in 1939, an increase of 81 percent.

Table 3.--Average earnings and hours in meat packing, wholesale trade, and food retailing, 1932, 1939, and 1947

Industry and year	Average weekly earnings Dollars	Average weekly hours Number	Average hourly earnings Cents
Slaughtering and meat packing <sup>1/</sup>			
1932 .....	21.61	46.3	46.5
1939 .....	27.85	40.6	68.6
1947 .....	55.31	44.5	124.5
Wholesale trade			
1932 .....	27.72	2/	2/
1939 .....	29.85	41.7	71.5
1947 .....	52.40	41.2	125.8
Food retailing			
1932 .....	2/	2/	2/
1939 .....	23.37	43.9	52.5
1947 .....	43.79	40.4	105.2
<hr/>			
1/ Production workers only.			
2/ Not available.			

United States Bureau of Labor Statistics, Handbook of Labor Statistics, 1947 Edition, U.S. Bur. Labor Statis. Bul. 916, 221 pages.



A rough estimate of change in labor cost per pound of meat for any two periods may be made by comparing the total pay roll of the industry in the two periods in relation to the total volume of products. In 1947 pay rolls in the meat packing industry were 2.7 times as large as in 1939, whereas the total weight of meat and lard produced was approximately 1-1/3 times as large.<sup>8/</sup> This would indicate that labor cost per pound of meat was at least twice as high in 1947 as in 1939.

Increases in unit labor cost of retailing meat are difficult to estimate because data are not available for meat retailing separate from other departments of retail food stores. Both pay rolls and average hourly earnings in retail food stores doubled from 1939 to 1947. Average hourly earnings were \$1.05 in 1947, compared with 52.5 cents in 1939. Total consumption of meat and lard increased about 26 percent between 1939 and 1947. The increase in unit labor cost in retailing meat was, therefore, probably not more than 65 percent between 1939 and 1947.<sup>9/</sup>

Salary and wage costs, exclusive of labor costs of transportation, normally account for about half of the total price spread between farmer and consumer in the marketing of livestock and meat. When the price level changes, either up or down, wage adjustments generally lag behind. The position taken by labor is one of the factors which could prevent actual marketing margins from narrowing when prices fall.

#### Transportation

Average expenses for transporting livestock to markets or to other outlets in 1947 was 46 cents per 100 pounds, compared with 35 cents per 100 pounds in 1939 and 33 cents in 1932.<sup>10/</sup> From 1939 to 1947 transportation expense for rail shipments increased 17 percent and for truck shipments about 40 percent. Both rail and truck expenses increased about 6 percent between 1932 and 1939. Transportation of livestock by truck increased considerably in importance from 1932 to 1947. Increases in rates for transporting meat averaged about 10 percent from 1932 to 1939 and about 18 percent between 1939 and 1947. Further increases in both rail and truck rates have become effective since 1947.

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<sup>8/</sup> Index of pay rolls of production workers in meat packing industry from the Bureau of Labor Statistics, and production of meat and lard from United States Dept. of Agr. Livestock Market News, Statistics and Related Data, 1947, p. 89, 95 pp. (processed). The Meat Packing Industry produces many products other than meat, therefore the increase in pay rolls for the entire industry may not accurately reflect the increase for meat only.

<sup>9/</sup> Assuming that meat sold through retail stores increased at the same rate as total consumption and that pay rolls for meat retailing increased at the same rate as pay rolls for all food retailing. (In 1947 the index of pay rolls was 208.2, using 1939 as base).

<sup>10/</sup> Farstad, Edmund, See footnote 5.



Change in transportation costs have lagged behind changes in prices of livestock and meat, whether the trend in prices was up or down. Therefore, changes in level of prices may change the share of the consumer's dollar that goes for transportation costs relative to shares received by marketing agencies for other functions.

Direct comparisons of costs of trucking livestock with cost of rail shipments are difficult because different services are performed. The trucker picks up the livestock at the farm and delivers the load to the market. The rail rate covers shipment from the local shipping point, and the farmer has an additional expense of getting the livestock from his farm to the shipping point.

### Location of Slaughter Plants

During the last few decades the trend in slaughter has been away from plants located in the East to plants nearer the source of supply. The trend has also been from the larger market centers to the smaller cities and towns in the livestock feeding areas, and especially in the northwestern Corn Belt. A continuation of these trends would be likely to affect marketing margins somewhat. The expense of marketing live animals would probably be less, because of smaller transportation and feed costs. Cost of marketing meat might be greater, as larger proportions would need to be shipped to distant consuming centers. A larger part of the marketing cost might be attributed to the marketing agencies.

The sharp increases in population, the increase in the income level of the people and the adjustment in livestock production in the Pacific Coast States in recent years have resulted in increased demand for meat in that region. The meat has been supplied largely by increased local slaughter, and to a lesser extent by greater inshipments of meat, especially pork, from regions farther east. Considerable numbers of cattle and sheep shipped into the region as stockers and feeders from the western and central Mountain States were fed for the slaughter market. Cattle and sheep suitable for slaughter were also received from these regions. In the case of hogs, considerable numbers were received from the western Corn Belt.

### Methods of Selling Meat

One recent development in methods of merchandising meat is the pre-cutting and packaging of fresh meat, which is successfully carried on in retail establishments where large volumes of meat are sold. This arrangement permits professional meat cutters to devote their full time to preparation of retail cuts.

Although selling of packaged pre-cut meat is a comparatively recent development and accounts for only a small part of the sales of meat, the trend is toward a greater demand for this kind of merchandising especially in self-service grocery and meat stores. The meat is sold in consumer-sized packages from refrigerated counters.



At present, most of the meat sold through self-service meat departments is cut and packaged by retailers. Because of deterioration in packaged fresh meat, it is almost necessary to package it near the point of sale. Cold cuts and luncheon meats also become discolored and lose flavor when packaged for too long a time before selling, therefore, they are more satisfactorily packaged by retailers than by meat packers. Future improvements in equipment and packages may make it possible for meat packers to increase the amount of meat packaged in consumer-sized packages. This would tend to increase expenses of meat packing but it would decrease expenses of retailing.

### Supply and Demand

Discussion of supply and demand is limited, in this report, to two topics directly relating to meat. They are (1) consumer choice of meat, and (2) kind and quantity of meat available. The level and distribution of consumer income and other economic conditions which are major factors in the demand for meat are not discussed, except indirectly.

#### Consumer Choice of Meat

Many factors may influence consumers in choosing between kinds of meat--beef, pork, lamb--and between cuts of meat. Choice is influenced by preference as to taste, use, time and facilities for cooking, price, custom, religion, and other factors. If beef is decided upon, for example, the further choice is between meat cuts, as rib roast, sirloin tip, chuck roast, boneless rump, round, etc. When prices of meats are high relative to prices of other consumer goods and to income, the choice is likely to be for smaller quantities of regularly purchased meats, for lower-priced cuts, or for cuts having a greater proportion of lean meat.

Along with choosing particular cuts of meat, consumers may also have a choice of qualities of meat. Choice of quality may be made on the basis of purchasing habits as to grade, or because of the appearance of the meat with respect to quantity of fat, color of lean and fat, texture of lean, and degree of marbling.

Those who prefer a small amount of fat may do so for economy reasons. The economy would depend not only upon the price per pound, but also upon the quantity of edible meat. Some of the fat from beef is not eaten. Porterhouse steak from a Choice or Good grade carcass at 80 cents a pound may be considered a luxury because of the loss from bone and fat, whereas round steak from the same carcass at the same price may not be so considered.

Grades and brands.--As aids in identifying quality of meat, the Government has established grade names based on certain quality standards, and meat packers have their own brands and grades which may indicate difference in quality. Some packers sell meat that carries both the packer brand and the Government grade. A survey made in 1939 indicated that most women who bought meat knew comparatively little about either



the grades or brands of meat. <sup>12/</sup> However, they may prefer meat having certain grade characteristics without associating the characteristics with grade names. Customers may refuse to buy a particular cut of beef because experience has taught them that a cut of that type is not tender, but they may not know the Government grade or packer brand to ask for to get the quality of meat wanted.

Even though customers know Government grades and their meaning, they may not be able to use this knowledge because the greater part of meat sold is not Government graded and stamped. Before Government price and ration controls were established in 1942 and 1943, Government grading of meat was on a voluntary basis. At that time less than 10 percent of beef and only about 3 percent of lamb and mutton sold was Government graded. During the war grading of beef, veal, lamb, and mutton was compulsory. But with large requirements going for war purposes, and other distortions of distribution resulting from wartime conditions, much of the better grade of meat did not go through the usual retail channels, so that the average consumer still had little opportunity to indicate preference by grade.

After Government grading was restored to a voluntary basis in October 1946, the proportion of meat graded dropped, although not to prewar levels. However, in 1947 less than 30 percent of the beef, lamb, and mutton was graded.

#### Kind and Quantity of Meat Available

All meat produced is bought by consumers at some price. If supplies are large relative to consumer purchasing power, consumers buy the meat but at relatively low prices. If supplies are short, prices are relatively high.

The kind and quantity of meat available at any particular time is determined largely by the volume and kind of meat animals bought by meat packers and other slaughterers at an earlier period. Most beef, veal, and lamb is ready for consumption as fresh meat within 10 days from time of slaughter of the animals. About half of all pork is cured, and the curing requires 10 to 30 days, depending upon the process used. Cured products may be held for varying periods with no ill effects.

Most pork can be made ready for consumption within a comparatively short time, but if all of it were sold into consuming channels as soon as slaughtering and curing permitted distribution would be unequal throughout the year. Marketing of hogs is very seasonal; numbers marketed usually reach a peak in December or January and again in May or June. The lowest point comes in August or September. Curing and storing of pork makes available a more uniform supply than would otherwise be possible.

The volume of meat animals offered for sale to packers varies by days, by seasons, and over longer periods of time. The day-to-day varia-

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<sup>12/</sup> Ashby, R.C., Webb, J. J., Hedlund, E. C., and Bull, Sleeter. Retailer and Consumer Reaction to Graded and Branded Beef, Ill. Agr. Expt. Sta. Bul., 479, pp. 337-392 illus. 1941. See p. 390.



tion in marketing of livestock affects the efficiency of packinghouse operation and it may in turn affect prices, but because of the flexible planning of packers, it does not greatly affect the availability of meat supplies to consumers. Seasonal variation in marketings of meat animals necessitates larger storage holdings of meat at some times of the year than at others. This is especially true of pork.

The volume of meat animals supplied to packers is determined largely by the number of livestock in the country and the supply of feed. When the supply of feed is large in relation to the number of animals on farms, prices of feed decline relative to prices of animals. This encourages farmers to increase production of livestock. When a large number of producers decide to increase production overexpansion may occur. But when feed becomes relatively scarce and prices high in relation to prices of livestock, because of overexpansion of livestock, adverse crop-growing conditions, or other causes, livestock numbers tend to be reduced, thus causing the supply-price relationship between feed and livestock to be reversed.

Some time must elapse between the decision to expand livestock numbers and the effect of such expansion upon the supply of meat. Because the cycle for production of hogs is shorter than for beef cattle and lambs, the variations in quantities of pork, beef, and lamb available to consumers are quite different.

Long-time trends in production of livestock and meat are determined largely by feed supplies and grazing resources available for producing meat animals and by production techniques.

#### YIELDS OF CARCASSES AND RETAIL CUTS

Dressing yield, or dressing percentage, refers to the weight of the carcass in relation to the weight of the live animal. As generally used, dressed weight does not include the weight of edible offal--heart, liver, brains, etc. Dressing yields vary by species, by weights, and by the degree of finish. Well-finished animals have higher dressing yields than have animals of poor finish, and heavier animals have higher dressing yields than have those of lighter weight of the same kind. Some loss in weight results from evaporation and trimming in preparing retail cuts from the carcass or wholesale cuts.

#### Beef

Dressing yields.--The relative differences in dressing yields for beef steers of different grades and weights are shown in table 4. These are representative average yields. Carcass yields of individual animals of the same weight and grade may vary considerably. Average yields of beef steers range from about 53 percent for Utility or Common grade to around 63 percent for heavy steers of Choice grade. Dressing percentages of heifers are only slightly less than for steers of comparable grade and weights.



Table 4.--Average dressing yields of beef steers, by grade and weight

Weight class	Choice	Good	Commercial or medium	Utility or common
	Percent	Percent	Percent	Percent
750-900 pounds..:	59	58	) 55	) 53
900-1100 " ....:	60	59		
1100-1300 " ....:	62	60		
1300-1500 " ....:	63	61		

From American Meat Institute. Approximation, for illustrative purposes only.

Choice steers weighing between 750 and 900 pounds average about 59 percent dressing yield. As the weight increases the dressing yield also increases. Carcasses from Choice steers in the 1,300-1,500 pound class average about 63 percent of the live weight. Average dressing yields for Good-grade steers range from 58 percent for the light animals to 61 percent for those weighing 1,300-1,500 pounds.

For steers of the same weight, the grade or degree of finish has considerable effect on dressing yields. The average yield of Utility or Common grade is about 53 percent of live weight and Choice steers of the same weight average about 60 percent.

Yield of retail cuts.--Figure 2 shows the parts of a beef carcass from which various wholesale and retail cuts are obtained. The uses to which the cuts are best adapted are also indicated. Average yields of trimmed retail cuts are given in table 5 for Choice, Good, and Medium grade steer carcasses. A larger proportion of fat in Choice carcasses causes the total yield of cuts to be less than is obtained from carcasses of lower grade as some fat is generally removed by trimming. However, higher dressing yields for the better grade of animals tend to compensate for this so that the total weight of trimmed retail cuts from 100 pounds of live steer is approximately the same for each of the three grades of beef animals.

Yields of individual cuts from a carcass differ by grades. For example, because of trimming and boning, medium-grade carcasses yield a higher percentage of trimmed cuts of steak than do Choice-grade carcasses. However, a Choice carcass has higher percentages of rib roast, plate beef and brisket.

When cut according to the Chicago method of cutting, <sup>13/</sup> the yield

<sup>13/</sup> The Chicago method of cutting differs in some respects from the New York method. The total weight of meat obtained by the New York method of cutting is a little less than by the Chicago method because more of the beef is boned.



# BEEF CHART

## Wholesale and Retail Cuts

Numerals in circles refer to wholesale cuts and major subdivisions of such cuts. Letters refer to retail cuts.

### ① HIND SHANK

- a. Soup bones
- b. Hock

### ⑥ FLANK

- a. Flank steak
- b. Stew or ground beef

### ⑨ PLATE

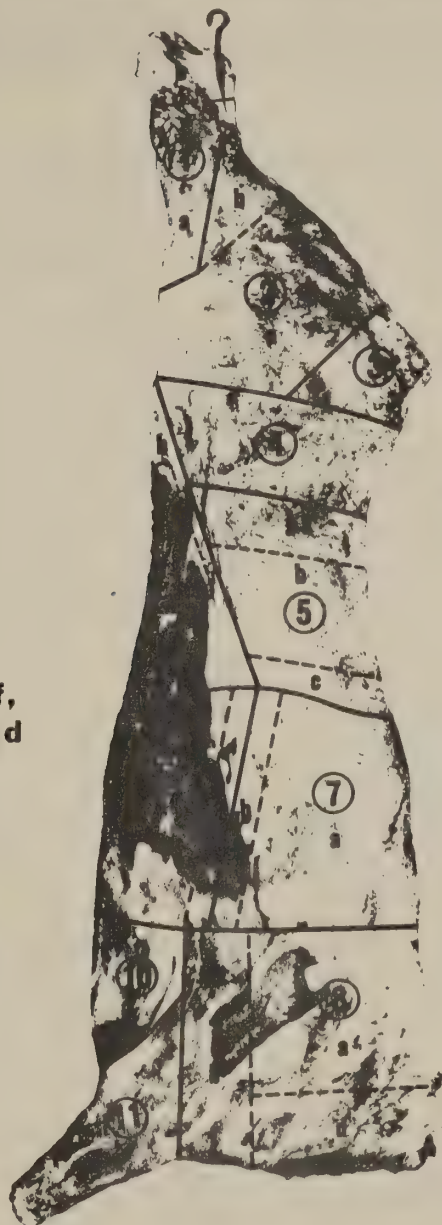
- a. Stew, ground beef, or boned and rolled pot roasts
- b. Short ribs

### ⑩ BRISKET

- Stew or boned and rolled pot roasts

### ⑪ FORE SHANK

- Soup bones or ground beef



### ② ROUND

- a. Round steaks or roasts
- b. Pot roast

### ③ RUMP

- Roasts or steaks

### ④ LOIN END

- Sirloin steaks or roasts

### ⑤ SHORT LOIN

- a. Porterhouse steaks
- b. T-bone steaks
- c. Club or Delmonico steaks

### ⑦ RIB

- a. Rib roasts or steaks
- b. Short ribs

### ⑧ CHUCK

- a. Chuck rib roasts or steaks
- b. Arm pot roasts or steaks
- c. Corner piece
- d. Stew or ground beef

## YIELDS OF WHOLESALE CUTS AND SUBDIVISIONS

### Percentage of Carcass Weight

① to ⑥	HINDQUARTER . . . . .	48.0%
① to ③	Round and Rump . . . . .	24.0%
①	Hind shank . . . . .	4.0%
②	Buttock . . . . .	15.5
③	Rump . . . . .	4.5
④ and ⑤	Full loin inc. suet. . . . .	20.5
④	Loin end . . . . .	8.0
⑤	Short loin . . . . .	9.0
	Kidney knob . . . . .	3.5
⑥	Flank . . . . .	3.5

⑦ to ⑫	FOREQUARTER . . . . .	52.0%
⑦	Rib . . . . .	9.5%
⑧	Chuck . . . . .	24.5
⑨	Plate . . . . .	8.0
⑩	Brisket . . . . .	6.0
⑪	Fore shank . . . . .	4.0



Table 5. - Beef: Approximate yield of trimmed retail cuts from Choice, Good, and Medium grade steer carcasses.

Retail cut	: Trimmed retail cuts as percentage of : carcass weight 1/		
	: Choice grade	: Good grade	: Commercial, or medium grade
	: <u>Percent</u>	: <u>Percent</u>	: <u>Percent</u>
Porterhouse steak .....	: 6.4	: 6.8	: 7.1
Sirloin steak .....	: 7.8	: 8.0	: 8.4
Round steak .....	: 11.0	: 12.5	: 13.2
Heel of round .....	: 2.6	: 3.0	: 3.6
Flank steak .....	: .7	: .7	: .6
Boneless rump .....	: 2.8	: 3.0	: 3.4
Rib roast - 5 ribs .....	: 5.9	: 5.8	: 5.5
Blade roast - 2 ribs .....	: 3.4	: 3.2	: 3.1
Chuck, round bone .....	: 5.0	: 5.1	: 5.2
Chuck .....	: 10.2	: 10.5	: 10.9
Plate .....	: 7.0	: 7.0	: 6.9
Brisket, bone in .....	: 5.2	: 5.0	: 4.7
Ground meat .....	: 4.2	: 3.8	: 3.8
Boneless stew and kidney ...	: 8.4	: 8.4	: 9.2
Total .....	: 80.6	: 82.8	: 85.6
Approximate carcass yield ..	: 60	: 59	: 57
Approximate yield of retail outs from live weight ....	: 48.4	: 48.8	: 48.7

1/ Yield of retail cuts is based on Chicago method of cutting.

Edinger, A. T. Meat cutting and pricing methods, pp. 19, 21, and 23. See footnote 16.



of retail cuts from a beef carcass of Good grade is about 83 percent of carcass weight. This is divided approximately as follows: 15 percent porterhouse and sirloin steak, 13 percent round and flank steak, almost 28 percent roast (chuck, rib, sirloin, and other), about 15 percent boiling or stew beef (brisket, plates, and heel of round), 4 percent ground meat from lean trimmings, and 8 percent boneless stew and kidneys. Expressed in weight from a 1,000-pound steer these yields are 87 pounds of porterhouse and sirloin steak, 78 pounds of round and flank steak, 163 pounds of roasts, 88 pounds of boiling or stew beef, 22 pounds of ground meat, and 50 pounds of boneless steak, or a total of 488 pounds. In addition, about 40 pounds of fat trimmings result from retail cutting.

### Pork

Dressing yields.--Dressing yields of hogs increase with the weight and finish of the animals. Dressing yields from 5,000 normally fed hogs, weighing from 60 to 380 pounds, varied from 67 to 80 percent of feed-lot weight. The average 100-pound pig yields about 71 pounds of dressed carcass (including head), a 200-pound hog yields about 152 pounds, or 76 percent of live weight, and a 300-pound hog yields approximately 237 pounds of carcass, or 79 percent. <sup>14/</sup>

Annual average dressing yields for all federally inspected hog slaughter ranged from 74.5 to 75.9 percent of live weight for the years 1932-47. These yields are on the basis of chilled weight of carcass, with head off, jowls on, and leaf fat and kidney out. Average live weight at slaughter ranged by years from 220 to 255 pounds. <sup>15/</sup>

Yield of pork cuts.--The method of cutting hog carcasses into wholesale and retail cuts is illustrated in figure 3. The percentage of the carcass in each wholesale cut is also shown.

The proportions of the different parts of the hog carcass also vary with live weight of the hogs slaughtered (table 6). As live weight increases, the proportion of hams, loins, and shoulders decreases slightly, and that of bellies and especially of cutting fat increases. <sup>16/</sup>

The retail weight of pork from the hog carcass depends upon the amount of trimming and the use made of fat backs and plates, which may be rendered into lard or sold as cuts. When the price of meat is high in relation to the price of lard, the tendency is to do less trimming. The average yield of lard from federally inspected hog slaughter for the

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<sup>14/</sup> Hankins, O. G., and Titus, Harry W. Growth, Fattening and Meat Production, U.S. Dept. Agr. Yearbook of Agr., (Food and Life), 1165 pp. illus., 1939. See pp. 453-454.

<sup>15/</sup> United States Dept. of Agr. Livestock Market News, Statistics and Related Data, 1947. See footnote 8.

<sup>16/</sup> Cutting fat is the fat removed in the process of trimming the wholesale cuts in the packing plant; it also includes such of these cuts which are rendered into lard rather than sold for use as pork.



# FRESH PORK CHART

## WHOLESALE AND RETAIL CUTS



### WHOLESALE CUTS - PERCENTAGE OF CARCASS

1 - HIND FEET	1.00%	7 - BRISKET	2.25 %	12 - JOWL BUTTS (TRIMMED)	2.25 %
2 - HAMS	19.00	8 - PICNIC	7.50	13 - BONELESS BUTT	3.05
3 - CLEAR BELLIES	16.50	9 - N.Y. STYLE SHOULDER	16.00	13 - BOSTON BUTT	5.20
4 - PORK LOINS	12.75	10 - NECK BONES	.95	14 - LOIN BUTT	4.00
5 - SPARE RIBS (F.S.)	2.50	11 - PICNIC BUTT	3.02	15 - FORE FEET	.92
6 - SPARE RIBS (H.S.)	1.50	12 - JOWL BUTTS (UNTRIMMED)	3.75	16 - LEAF FAT	3.52

PRODUCTION AND MARKETING ADMINISTRATION (LIVESTOCK BRANCH)

FIGURE 3



Table 6. - Yield of specified cuts of hog carcasses, classified according to live weight of animals.

Item	Unit	Hogs weighing				
		Less than: 130 pounds	130-159 pounds	160-199 pounds	200-249 pounds	250 pounds or more
Hogs in cutting test.	Number	26	41	199	240	92
Average live weight						
at slaughter .....	Pounds	106	146	183	218	289
Average weight of						
chilled carcass ...	Pounds	78.0	116.0	146.0	177.5	238.5
Average dressing yield:	Percent	73.6	79.5	79.8	81.4	82.5
Yield of cuts from						
carcass						
Hams .....	Percent	19.9	18.4	18.4	17.5	17.0
Loins .....	Percent	13.2	12.2	12.1	11.6	11.0
Bellies .....	Percent	9.4	10.1	10.8	11.4	11.9
Shoulder (3 rib,						
full cut) .....	Percent	18.5	17.7	17.4	17.0	16.7
Head .....	Percent	10.7	9.8	9.4	8.9	8.5
Cutting fat <sup>1/</sup> ..	Percent	10.9	15.0	16.8	19.5	21.5
Other .....	Percent	17.4	16.8	15.1	14.1	13.4
Total .....		100.0	100.0	100.0	100.0	100.0

<sup>1/</sup> Consists of back fat, leaf fat, and fat trimmings.

Data from Warner, K. F., Ellis, N. R., and Howe, Paul E., Cutting Yields of Hogs an Index of Fatness, Jour. Agr. Research 48:241-255, illus. 1934.



years 1932-47 has varied between 11 and 15 pounds per 100 pounds of live weight. Retail weight of pork obtained from a hog also depends upon the proportion of cuts that are cured and smoked. Weight increases during the curing process as a result of absorption of the curing solution or ingredients, but most of this gain in weight is lost when the meat is smoked. The final weight of meat which has been both smoked and cured may not differ greatly from the original fresh weight. In addition to the products from the hog carcass, there are about 5.5 pounds of edible offal per 100 pounds of live weight, including liver, heart, kidneys, casings, etc.

### Lamb

Dressing yields.--Lambs, when ready for slaughter, usually weigh from 80 to 95 pounds and dress out, on the average, about 46 to 47 percent of live weight. Dressing yields of lambs vary by grade and also tend to vary by seasons. Seasonal variation is affected by two factors--the weight of the animals and weight of wool on the pelt. Lambs slaughtered in the winter and early spring average heavier than those slaughtered in other months because they are older and to a large extent have been fed grain or other concentrates. Because of their greater finish these heavier lambs yield a higher percentage of carcass than the lighter weight lambs which have been fattened on grass. Carcass yields in relation to live weight are also influenced by the weight of wool on the pelt. The quantity of wool carried is greatest during the months immediately prior to shearing, which is usually done in the spring. In the fall, when lambs come to market they are mostly off grass and the average live weight is relatively light. The percentage attributed to the pelt at that time is also comparatively small. Based on several years' experience, one large packing concern reports that carcass yield tends to be highest in June and decreases slightly in succeeding months.

Yield of lamb cuts.--The standard method of cutting lamb carcasses and the use to which the cuts are best adapted are shown in figure 4. The percentage yields of wholesale cuts shown are approximate average yields for all slaughter. The yield of trimmed wholesale cuts from carcass weight, for Good grade, medium weight carcasses are: 17/

	<u>Percent</u>
Loin .....	11.2
Rib chops .....	11.2
Leg, long cut .....	33.8
Square chuck, neck on .....	25.3
Stew meat (breast, briskets, shank and flank).....	15.0
Kidney and suet.....	3.5
Total .....	<u>100.0</u>



# LAMB CHART

Numerals in circles ○ refer to wholesale cuts. Letters refer to retail cuts.

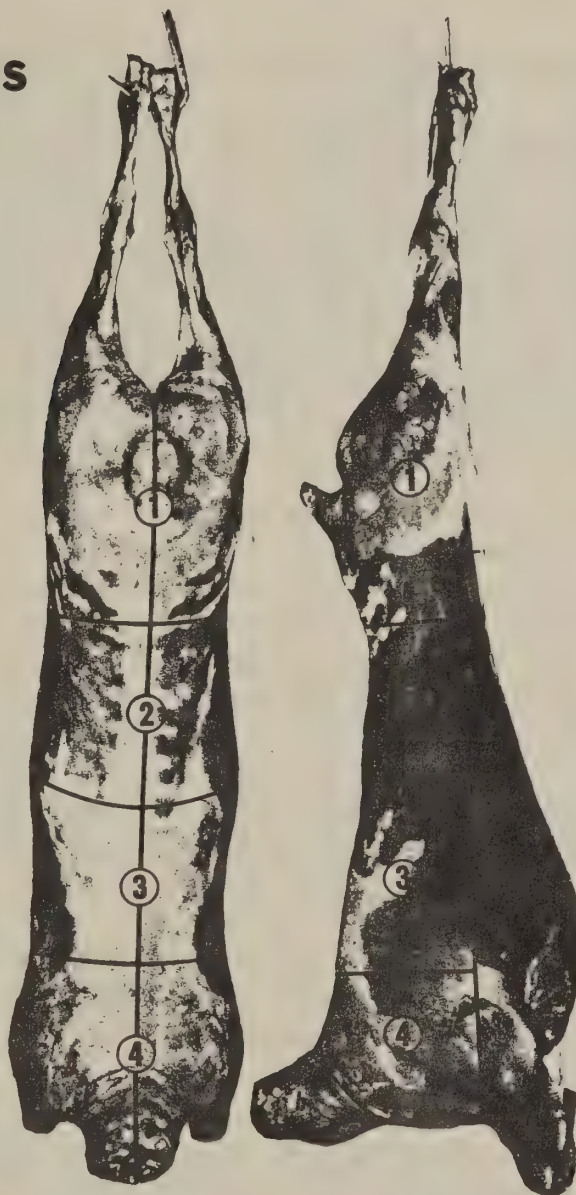
## WHOLESALE CUTS

### ① ② and ⑥ HIND SADDLE

- ① Leg
- ② Loin
- ⑥ Flank

### ③ ④ and ⑤ FORE SADDLE

- ③ Hotel Rack
- ④ Chuck
- ⑤ Breast



## RETAIL CUTS

- ① **LEG**  
a. Roast  
b. Chops or roast
- ② **LOIN**  
Loin and kidney chops
- ⑥ **FLANK**  
Stew
- ③ **HOTEL RACK**  
Rib chops or roast
- ④ **CHUCK**  
a. Roast or chops  
b. Neck slices or stew
- ⑤ **BREAST**  
Stew

## YIELDS OF WHOLESALE CUTS

Percentage of Carcass Weight

① ② and ⑥ Hind saddle . . . . . 50.0%	③ ④ and ⑤ Fore saddle . . . . . 50.0%
① Leg . . . . . 33.0%	③ Hotel rack . . . . . 11.0%
② Loin and ⑥ Flank . . 17.0	④ Chuck . . . . . 25.0
	⑤ Breast, inc. shank 14.0

PRODUCTION AND MARKETING ADMINISTRATION (LIVESTOCK BRANCH)

FIGURE 4



The yield of wholesale cuts varies only a little as between carcasses of Choice, Good, and Medium grades. Further trimming and boning of cuts may take place in the retail shops. In addition to the carcass yield of lamb, there are about 2 pounds of edible byproducts per hundred pounds of live weight, such as heart, liver, and tongue.

#### RELATIONSHIPS BETWEEN RETAIL PRICES OF VARIOUS CUTS OF MEAT

The retail meat dealer buys carcasses or wholesale cuts of beef and lamb and sells retail cuts such as steak, rib roast, lamb chops, and leg of lamb. These cuts may be sold trimmed or untrimmed, and some are boned. Pork is usually bought by dealers as wholesale cuts. Cutting and trimming of some wholesale cuts of pork such as loins, is also done at the retail store. Other cuts, such as hams and picnics, may be sold without further cutting in the same form as bought at wholesale. Hams also are sold in slices. Retailers buy lard and much of the bacon packaged ready for sale to consumers.

The demand for the different cuts of meat varies greatly at any one time. But unlike manufacturers of many other food products, the meat packer cannot change the proportions of the products appreciably because of differences in demand. His output of products is determined by the kind and grade of animals offered for sale by livestock producers and the proportion of the different cuts is nearly fixed. He cannot produce more round steak and less porterhouse steak, or more ham and less pork shoulder.

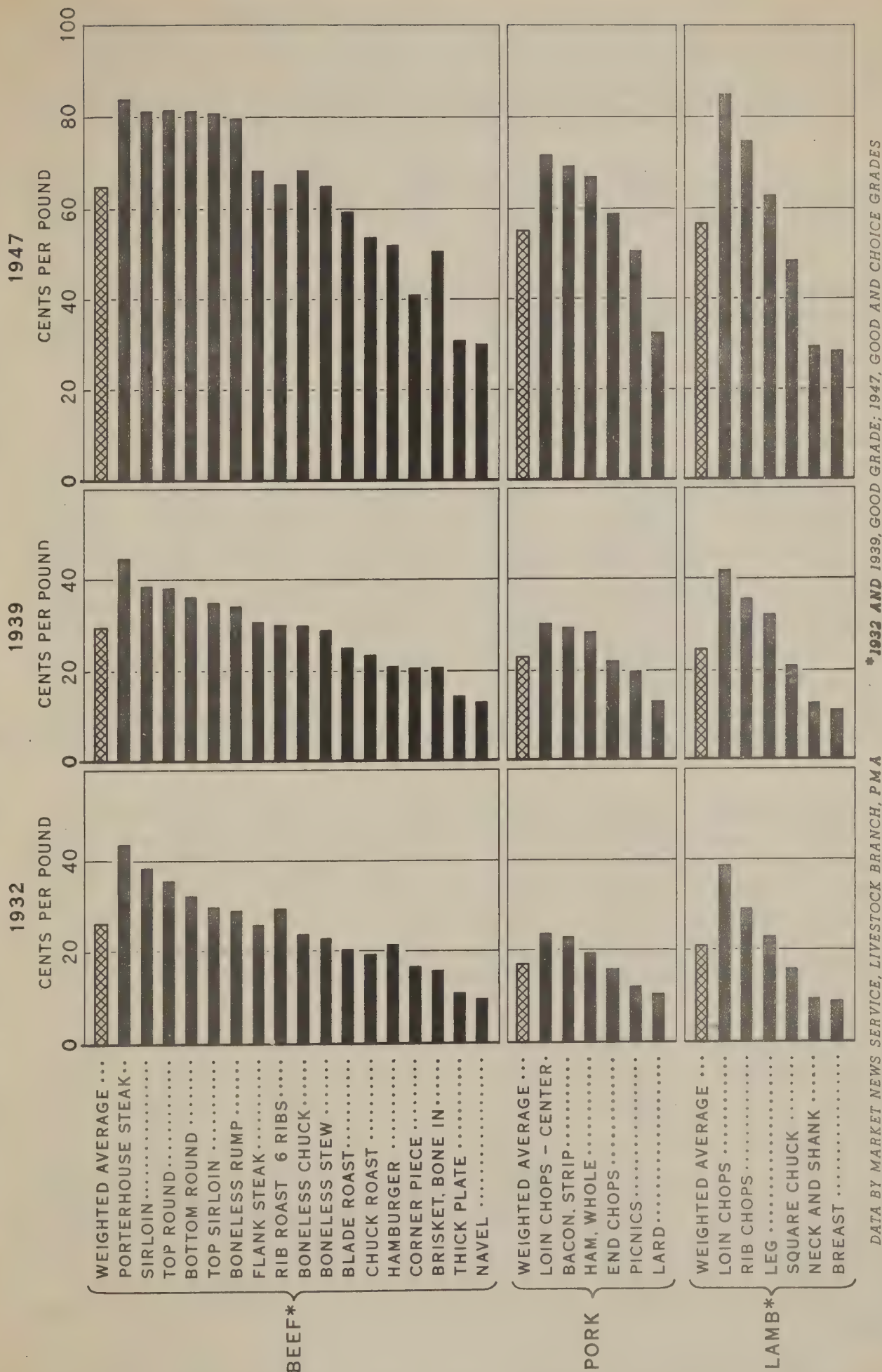
In order to sell all cuts from the meat they buy in the form of carcasses or wholesale cuts, retailers sell different cuts at prices which tend to reflect the relative demand for each. Spoilage of even small quantities because of failure to sell may mean the difference between profit and loss. For the cuts in greatest demand they must charge more per pound than for those in lesser demand. Prices of steak, ham, and lamb chops, therefore, are higher than those for spareribs, breast of lamb, briskets, and other relatively less desirable meat.

Consumer demand tends to shift to the lower-priced cuts when meat prices are high, and likewise may shift to the higher priced cuts when prices are relatively low. These shifts in demand may result in some cuts, normally quite different in price, selling for about the same price. In 1947, for example, prices of sirloin steak, top round, bottom round, top sirloin, and boneless rump in New York all averaged 80 to 81 cents a pound (fig. 5 and table 7), whereas in 1932 prices of these cuts ranged from 29.1 cents a pound for boneless rump to 38.4 cents a pound for sirloin steak. In 1947, prices of both rib roast and boneless stew averaged the same--65 cents a pound. In 1932, the price of rib roast averaged 29.5 cents a pound and that of boneless stew 22.9 cents.

The relatively narrow range in average prices for beef in New York in 1947 compared with 1939 and 1932 reflects a decrease in consumer demand for luxury cuts such as porterhouse steak relative to the demand for the less expensive cuts and for cuts having a greater proportion of lean meat. Average prices of all cuts of beef were 64.8 cents a pound in 1947, 29.5



# AVERAGE RETAIL PRICES OF CUTS OF MEAT IN NEW YORK, 1932, 1939, AND 1947



U. S. DEPARTMENT OF AGRICULTURE

FIGURE 5

NEG. 47201 BUREAU OF AGRICULTURAL ECONOMICS

In 1947, prices of most retail cuts of meat in New York averaged from two to three times as high as in 1939, and prices in 1939 were somewhat higher than in 1932. The percentage range in prices for the different cuts of beef and lamb in 1947 was smaller than in either 1932 or 1939. This indicates an even greater demand for the lower-priced cuts in 1947 relative to prewar than for the higher-priced cuts. The percentage range in prices of major pork products was about the same for the 3 years.



Table 7. - Retail prices of meat in New York 1932, 1939 and 1947. 1/

Item	Retail price per pound			Price of cut as percentage of average price		
	1932	1939	1947	1932	1939	1947
	Cents	Cents	Cents	Percent	Percent	Percent
<b>Beef 2/</b>						
Porterhouse steak .	43.7	44.6	83.9	167	151	129
Sirloin .....	38.4	38.5	81.3	147	131	125
Top round .....	35.5	38.2	81.4	136	129	126
Bottom round .....	32.2	36.3	81.3	123	123	125
Top sirloin .....	29.6	35.0	80.8	113	119	125
Boneless rump .....	29.1	34.1	79.8	111	116	123
Flank steak .....	25.8	30.7	68.4	99	104	106
Rib roast - 6 ribs. .	29.5	30.1	65.3	113	102	101
Boneless chuck .....	23.7	29.8	68.5	91	101	106
Boneless stew .....	22.9	28.8	65.0	88	98	100
Blade roast .....	20.5	25.0	59.3	79	85	92
Chuck roast .....	19.3	23.4	53.7	74	79	83
Hamburger .....	21.5	21.0	52.1	82	71	80
Corner piece .....	16.6	20.6	41.2	64	70	64
Brisket, bone in ..	15.6	20.6	50.7	60	70	78
Thick plate .....	10.8	14.3	30.8	41	48	48
Navel .....	9.7	13.0	30.0	37	44	46
Weighted average 3/	26.2	29.5	64.8	100	100	100
<b>Pork</b>						
Loin chops - center	23.6	30.2	72.0	140	132	131
Bacon, strip .....	22.9	29.3	69.5	136	129	126
Ham, whole .....	19.3	28.2	67.0	114	124	122
End chops .....	15.8	21.9	58.7	93	96	107
Picnics .....	12.1	19.5	50.5	72	86	92
Lard .....	10.3	13.0	32.5	61	57	59
Weighted average 3/	16.9	22.8	55.1	100	100	100
<b>Lamb 2/</b>						
Loin chops .....	38.5	41.9	85.0	182	172	150
Rib chops .....	29.1	35.5	74.8	138	145	132
Leg .....	23.0	27.1	62.8	109	111	111
Square chuck .....	15.8	20.8	48.5	75	85	85
Neck and shank .....	9.4	12.6	29.4	45	52	52
Breast .....	8.7	10.9	28.2	41	45	50
Weighted average 3/	21.1	24.4	56.8	100	100	100

1/ Averages of bi-monthly prices for a sample of retail stores.

2/ 1932 and 1939, Good grade; 1947, Good and Choice grades.

3/ Prices of cuts combined in proportion to their respective yields from live weight.



cents a pound in 1939 and 26.2 cents a pound in 1932. Average prices of individual cuts ranged from 46 percent to 129 percent of the average price of all cuts in 1947, compared with ranges of 44 percent to 151 percent of the average price of all cuts in 1939, and 37 percent to 187 percent of the average price of all cuts in 1932.

Prices of major pork products in New York averaged 55.1 cents a pound in 1947, 22.8 cents a pound in 1939 and 16.9 cents a pound in 1932. The percentage range in prices of the different pork cuts was only a little less in 1947 than in 1932 and in 1939, indicating only a minor shift in demand for the various cuts. Prices of lamb cuts showed a narrower range in 1947 than in 1932 and 1939 which indicated some shift in consumer demand from high-priced cuts to lower-priced cuts.

#### RELATIONSHIP OF PRICES OF SPECIFIED CUTS TO PRICES OF LIVE ANIMALS

Many consumers would like to have a guide by which to tell whether the prices charged for meat are reasonable in relation to prices the producers receive for live animals. Any such relationship which can be shown must, of necessity, be based upon average prices in the past. Because of the many factors that affect the marketing costs for livestock and meat it is impossible to predict future relationships accurately. However, average relationships of retail prices of specified cuts to market prices of live animals for earlier periods are shown in table 8. These relationships are based upon market prices of live animals in Chicago and United States average composite retail prices of meat; and upon relationships between prices of specified cuts and average price of all cuts in New York City. <sup>18/</sup>

Market prices of live animals fluctuate more than do retail prices of meat because retail prices include a large proportion of costs that change slowly. For this reason we cannot assume that a 50-percent increase in market prices of meat animals will mean a 50-percent increase in retail prices of meat, or that prices of different cuts increase at the same rate. For example, a market price in Chicago of \$5 per 100 pounds for Good-grade beef steers was associated with retail prices of 26 cents a pound for round steak, 21 cents for rib roast, 14 cents for chuck roast, and 17 cents for hamburger. A market price of \$10 per 100 pounds was associated with prices of 37 cents a pound for round steak, 31 cents for rib roast, 23 cents for chuck roast, and 21 cents for hamburger. When prices of beef steers averaged \$30 per 100 pounds, prices of these cuts averaged

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<sup>18/</sup> Annual data for 1924-41 and 1947-48 were used to estimate composite retail prices in relation to market prices of live animals. Prewar data for New York were used to estimate retail prices of specified cuts in relation to composite retail price of all cuts. (New York prices for 1947 and 1948 were not used because of lack of comparability with prewar years.)



Table 8. - Approximate retail prices of specified cuts of meat related to market prices of live animals. 1/

Market price of live animal per 100 lbs.	Beef - price per pound			Pork - price per pound			Lamb - price per pound		
	Round : steak :	Rib : roast :	Chuck : roast :	Hamburger : steak :	Pork : chops :	Whole : ham :	Sliced : bacon :	Lard :	Leg of : lamb :
Dollars	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
4.00					25	20	27	10	
5.00	26	21	14	17	26	22	29	11	20
7.50	32	26	18	19	31	27	35	15	25
10.00	37	31	23	21	36	31	42	19	30
12.50	43	36	28	23	41	36	48	22	35
15.00	49	41	33	24	45	41	54	25	40
17.50	55	45	38	26	50	46	60	29	44
20.00	61	50	43	28	55	50	66	33	49
22.50	67	55	48	30	60	55	72	36	54
25.00	73	60	53	31	64	60	78	40	59
27.50	79	65	58	33	69	64	84	43	64
30.00	85	70	63	35	74	69	90	47	69
32.50	91	75	68	37					
35.00	97	80	72	39					

1/ Based on regression relationships of market prices of live animals in Chicago and U.S. average composite prices of beef, pork and lamb, annual data 1924-41 and 1947-48; and upon regression relationships of composite prices and prices of cuts in New York, using prewar period.



approximately 85, 70, 63 and 35 cents respectively.

A fivefold increase in the market price of hogs--from \$5 to \$25 per 100 pounds--was associated with increases in prices of cuts as follows: pork chops, 26 to 64 cents a pound; whole hams, 22 to 60 cents; sliced bacon, 27 to 78 cents; and lard, 10 to 43 cents. An increase of \$2.50 in the market price of lambs was associated with an increase of approximately 5 cents a pound on leg of lamb and about 7 cents a pound for rib chops.

Although the increase in cents per pound for a given increase in the market price of live animals varies by cuts, the relative increase for most of the cuts is quite similar. These prices are based on average relationships of historical data and we cannot expect exactly these prices to prevail when prices at a particular market are the same as assumed in table 8. These relationships did not hold true for monthly prices of some cuts in 1947 and 1948, which was a period of very high prices.

#### COMPARING MARKETING MARGINS BY SPECIES

##### Over-all Margins

Marketing margins are not the same for all species of livestock. Farm-to-retail margins, in cents per retail pound of meat and as percentages of the retail prices for beef, pork, and lamb also differed in the three years 1932, 1939, and 1947 (table 9). Data are not available for estimating the break-down of margins among marketing functions, by species, comparable to those shown for all meat in figure 1 and table 1.

The average farm-to-retail marketing margin for cuts of Good-grade beef in 1932 was 13.2 cents a pound. At the same time the retail price of beef was 24.2 cents a pound. The margin was 16.9 cents in 1947 when the retail price of beef averaged 61.1 cents a pound. The margin for pork increased from 10.0 cents in 1932 to 13.6 cents per pound in 1947, when the composite retail price of pork products increased from 14.7 cents to 47.2 cents a pound. Likewise, the margin for lamb increased from 13.5 cents to 19.4 cents a pound when the average retail price of carcass cuts of lamb increased from 21.7 to 56.7 cents. Margins for beef, as percentages of retail price, decreased from 55 percent in 1932 to 28 percent in 1947. For the same period the percentage margin for pork decreased from 68 percent to 29 percent; for lamb from 62 percent to 34 percent; and for all meat products from 66 to 36 percent of the retail price.

To the total value of carcass cuts of beef and lamb and all pork products was added estimated values of all other meat products, including beef other than Good grade, edible beef and lamb byproducts, and processed meat such as sausage and canned meat. Because of the influence of prices and margins for these additional products the all-meat products group in 1947 shows a margin in cents per pound and as percentage of retail price that is higher than are the margins for individual species.



Table 9. - Average retail price of meat per pound, farm value of equivalent quantities of livestock sold by producers, and marketing margins, by species, 1932, 1939 and 1947. <sup>1/</sup>

Item	:	Retail	:	Farm	:	Farm-to-retail margin	
						Actual	: As percentage of retail price
		Cents		Cents		Cents	Percent
Beef - Good grade carcass cuts:	:						
1932 .....	:	24.2		11.0		13.2	55
1939 .....	:	28.6		15.7		12.9	41
1947 .....	:	61.1		44.2		16.9	28
Pork - all products, fresh and cured, including lard:	:						
1932 .....	:	14.7		4.7		10.0	68
1939 .....	:	18.9		8.8		10.1	53
1947 .....	:	47.2		33.6		13.6	29
Lamb - carcass cuts:	:						
1932 .....	:	21.7		8.2		13.5	62
1939 .....	:	26.4		13.2		13.2	50
1947 .....	:	56.7		37.3		19.4	34
All meat products:	:						
1932 .....	:	20.0		6.8		13.2	66
1939 .....	:	24.4		11.6		12.8	52
1947 .....	:	55.4		35.4		20.0	36

<sup>1/</sup> United States Bureau of Agricultural Economics, Price Spreads between Farmers and Consumers for Food Products, 1913-44, U.S. Dept. Agr. Misc. Pub. 576, 290 pp. illus., and subsequent data. The reference is for beef, pork and lamb. The all meat products group has been revised and expanded to include beef other than Good-grade, edible meat byproducts of beef and lamb, and processed products such as sausage and canned meat.



Figure 6 shows how percentage margins for beef, pork, and lamb decreased, on the average, as farm prices increased. These curves are based on average relationships between net farm value per retail pound of meat and margin as percentage of retail price, for 1920-40.<sup>19/</sup> Net farm value is the value at the farm of the equivalent of one pound of meat at retail. (See Appendix for method of computation). The war years when prices were controlled were omitted. In 1947, the percentage margin for beef was about the margin that would be expected from the relationship that prevailed for prewar years. For pork and lamb the percentage margins were less than would have been expected from the average prewar relationships. Percentage margins for 1932 and 1939 fall near the average relationship curves.

According to these average relationships for beef, when net farm value increased from 10 to 40 cents a pound, the margin decreased from 56 to 30 percent of the retail price. For pork, the increase from 10 to 40 cents a pound in net farm value was associated with a decrease in percentage margin from 53 to 33 percent of the retail price. The marketing margin for lamb was 58 percent of the retail price when the net farm value was 10 cents a pound and 39 percent of the retail price when the net farm value had increased to 40 cents a retail pound.

It is not assumed that these relationships will necessarily hold in the future as they may be influenced by several factors such as changes in methods of marketing and labor costs. However, the general conclusion may be drawn that when prices of livestock and meat are low, the marketing margin for livestock and meat, on a percentage basis, is relatively wide, and when prices of livestock and meat are high the marketing margin is relatively narrow.

#### Distribution of Over-all Margins among Marketing Functions

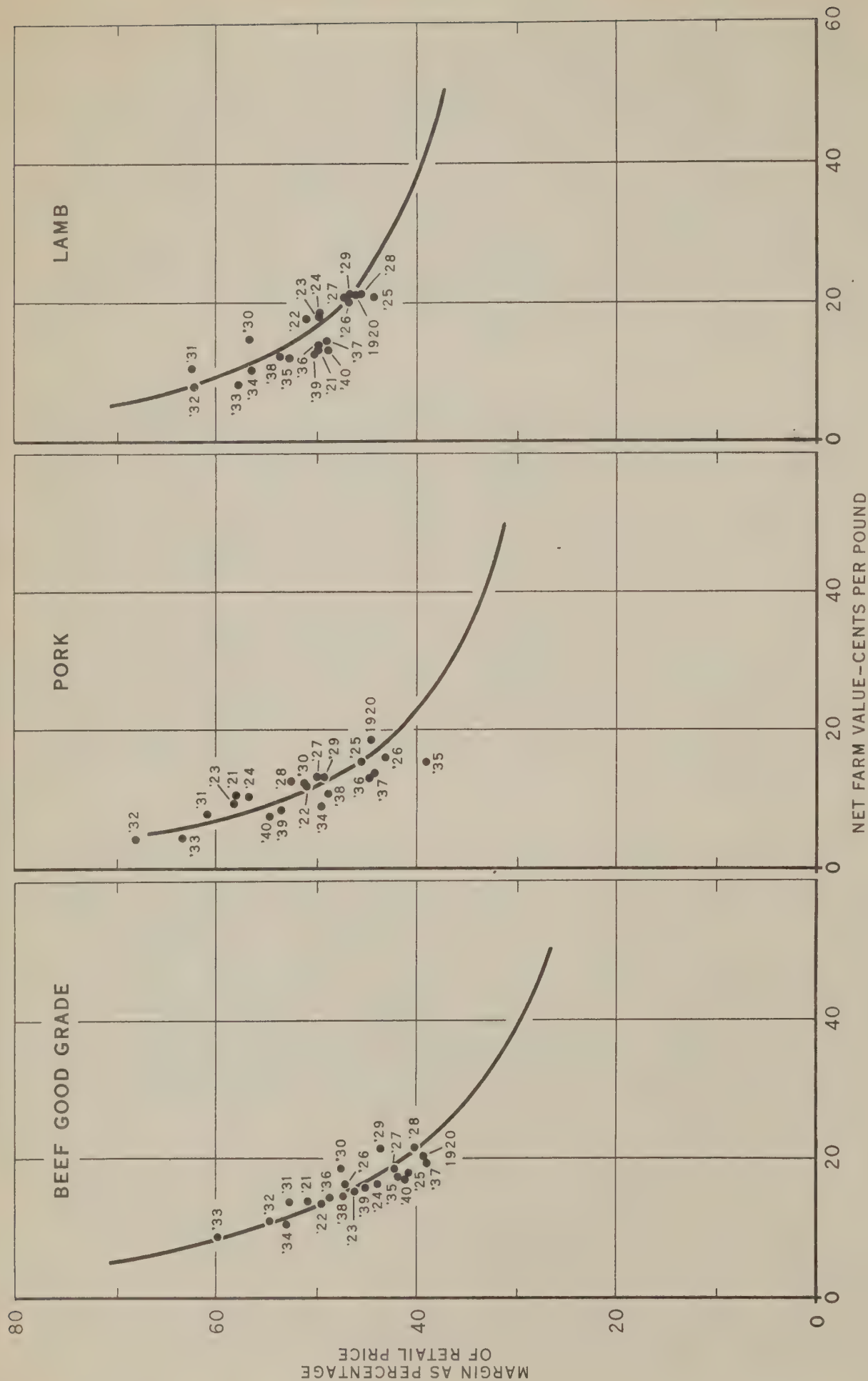
To show how distribution of total margins among marketing functions varies by species of livestock, percentages computed from margins for 1925-34, from a report of the American Meat Institute, are included (table 10). Retailing accounted for a smaller share of the total marketing margin for pork than for other meats, with processing taking a proportionately larger share. Retailing required 38 percent of the margin for pork, compared with 61 percent for beef, 72 percent for veal, and 54 percent for lamb and mutton. Processing accounted for 42 percent of the pork margin, compared with 23 percent for beef and 26 percent for lamb and mutton.

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<sup>19/</sup> Retail prices were estimated from regression equations computed from historical data, using assumed farm values. Margins were computed from assumed farm values and estimated retail prices. Regression equations, based on 1920-40 annual data are: Beef:  $R = 11.308 + 1.138 F$ ; pork:  $R = 8.499 + 1.283 F$ ; and lamb:  $R = 9.939 + 1.393 F$ ; where R is the retail price and F the net farm value. Similar relationships of average percentage margins to retail prices could have been used.



RELATIONSHIP OF MARGIN FOR MEAT TO NET FARM VALUE  
(REGRESSION RELATIONSHIPS ARE BASED ON ANNUAL DATA FOR 1920-40)



U. S. DEPARTMENT OF AGRICULTURE

NEG. 47202 BUREAU OF AGRICULTURAL ECONOMICS

FIGURE 6

Marketing margins for meat, expressed as percentages of retail prices, normally decrease as prices of meat animals increase. In 1947, the percentage margins for pork and lamb were less than would have been expected from average prewar relationships.



Table 10.--Distribution of total margins among marketing functions, 1925-34 average

Marketing function	Beef	Pork	Lamb and mutton	Veal	All meat
	Percent	Percent	Percent	Percent	Percent
Retailing	60.8	38.2	54.1	72.3	50.2
Wholesaling	9.2	10.4	7.6	7.6	9.7
Processing	22.8	42.4	26.4	14.0	31.7
Marketing live-stock	7.2	9.0	11.9	6.1	8.4
Total margin	100.0	100.0	100.0	100.0	100.0

Compiled from annual data in Tobin, Bernard F. What Becomes of the Consumer's Meat Dollar, The University of Chicago and the Institute of American Meat Packers, 79 pp. illus. 1936.

These differences are caused, in part, by the relative amount of cutting and trimming done by packers and retailers. The retailer buys pork products which require comparatively little further cutting and trimming, such as hams, shoulders, picnics, bacon, and sausage. He buys beef in halves and quarters which must be made into roasts, steaks, hamburger, etc., and some of the cuts are boned. Cutting of beef requires a greater amount of labor and cutting losses are greater. Cutting, curing, and smoking pork adds expense to the packer not incurred by other kinds of meat.

The wholesaling function accounted for from 8 to 10 percent of the total marketing margin, ranging from 7.6 percent for lamb and veal to 10.4 percent for pork. Expenses for marketing livestock took a larger part of the total margin for lamb than for other species because of the relatively light weight of the animals and greater transportation expense caused by longer distances hauled.

#### BYPRODUCTS

As a general rule, meat packers consider everything of value produced on the killing floor other than dressed meat as byproducts. Byproducts are divided into two classes--edible and inedible. Byproducts from beef and lamb slaughter are more valuable than those from hog slaughter, primarily because of the value of hides and pelts. Minor products removed when the carcass is cut into wholesale cuts, such as pig's feet, tails, neckbones, and lean trimmings are also classed as byproducts.

Byproducts account for about a sixth of the live weight of beef



steers. They include roughly 3 pounds of fresh meat, 3 pounds of edible oils, 6 pounds of hide and 5 pounds of other inedible products per 100 pounds of live animal. The value of these products average between 10 and 15 percent of the total value of carcass plus byproducts, at the wholesale level. The value of byproducts to the packer makes it possible, under normal conditions, for him to sell the carcass from a beef steer at wholesale for less than the cost of the live animal. Edible byproducts from beef cattle are brains, cheek meat, kidneys, livers, tails, sweetbreads, tongues, tripe, and others.

Edible byproducts from 100 pounds of live hog average 7 or 8 pounds. The value of meat byproducts averages around 5 or 6 percent of the total wholesale value of all products (fresh basis). Inedible byproducts of hog slaughter are of minor importance. They are mainly bristles and inedible grease. Fat rendered into lard is classed with major products. Edible byproducts include brains, cheek and head meat, hearts, kidneys, snouts, etc.

About 25 percent of the live weight of lambs is accounted for by byproducts. Of the byproduct weight, about 60 percent is pelt, 10 percent is meat, and the remainder is oleo oil, tallow, casings, bone, blood, and tankage. There is considerable seasonal variation in value of pelts, depending chiefly upon the length, grade, and condition of the wool. The value of lamb byproducts averages from 20 to 30 percent of the total wholesale value of carcass and byproducts.



## APPENDIX

### Computation of Over-All Farm-to-Retail Price Spreads 20/

The term "over-all margin" as used in this report is the total spread between the retail price paid by consumers for meat and the net farm value of equivalent quantities of livestock sold by producers after allowance for value of byproducts. The margins are derived from concurrent prices, that is, annual retail prices are averages of the 12 monthly prices and farm values are averages of values for these same months, with no allowance made for time which must elapse between slaughter of the animal and retail sales of the products. More time generally elapses between slaughter and distribution of pork than in that of other meats because of the curing process for a large portion of the carcass.

#### Retail Prices

Retail prices per pound of a particular cut of beef or pork cannot be compared with the price received per pound for the live animal, nor with the average price per pound of the carcass derived from such animal. To make valid comparisons, it is necessary to estimate the average price of all cuts from the carcass. This average price is called the "composite" retail price.

Average composite retail prices per pound of beef were estimated from United States average prices of a limited number of cuts reported by the Bureau of Labor Statistics for 56 cities. An estimating procedure was developed through the use of retail prices for all cuts in New York, compiled by the Livestock Branch of the Production and Marketing Administration. The method assumes that the relationship of value of specified cuts for which United States average prices are available to total value of all cuts is the same for the United States as for New York. A further adjustment was made to bring the composite price derived from city prices to the estimated level that represents average retail prices paid by all consumers. The composite retail price of beef does not include prices of meat byproducts, such as liver, heart, head, etc. Instead, an adjustment was made to exclude these noncarcass products in farm value to obtain comparability.

Similar procedures were used to estimate composite retail prices of

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20/ Over-all spreads for meats were reported in Bur. of Agr. Econ., Price Spreads Between Farmers and Consumers for Food Products, 1913-44, See footnote 6. These spreads for 1932, 1939, and 1947 for beef, pork, and lamb have been used in this report, revisions have been made in the meat group to include beef other than Good grade, edible byproducts of beef and lamb, and processed meats. These revised data are being prepared for publication.



all cuts from a lamb carcass, and composite of the more important cuts of pork. Pork products used are ham, picnics, bacon, loins and lard. Prices of other pork products and byproducts, such as spareribs, Boston butts, liver, feet, etc., are included by using the ratio of wholesale value of all fresh and cured hog products to wholesale value of major products in Chicago, assuming that the ratio of retail values will be the same as the ratio for wholesale values. <sup>21/</sup> Thus average retail prices of beef and of lamb are the estimated composite prices for all carcass cuts, and the average retail price of pork is the estimated average price of all edible pork products, including lard.

In determining the average retail price of all meat, retail prices of beef, veal, pork excluding lard, and lamb were weighted together. The weighted total was increased by 2 percent to allow for higher average prices of canned and other processed meat. Allowances for the price of veal and for byproducts and processed meat were estimated on the basis of relationships among average product values of the meat packing industry in 1935, 1937, and 1939, as reported by the Census of Manufactures. The value of lard was added to the value of meat to obtain the total value of meat products. The average retail price of all meat was computed by dividing the total value of meat and lard by the total weight purchased, or 335.4 pounds retail weight.

#### Net Farm Values

Net farm values are derived by species from average prices received by farmers for livestock reported by the United States Department of Agriculture, using farm live-weight equivalents and byproduct allowances explained later.

Prices received by farmers.--The monthly average price received by farmers for a particular species of livestock represents the average price for all sales at various points in the marketing system at which the livestock are sold by farmers. They may be sold at the farm, at local auctions, at concentration yards, at packing plants, or at public stockyards. The price reported includes payment for that part of the marketing services performed by producers. The annual price is the simple average of monthly prices.

Prices paid to farmers for beef cattle are representative of prices for all beef cattle, including animals which are sold as stockers and feeders and low-grade animals which do not reach the consumer in the form of retail cuts, but are processed into ground meat, sausage, or canned meat. This price was used in computing margins for all meat products, but it required adjustment for use in computing the margin for Good-grade beef.

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<sup>21/</sup> Edinger, A. T. Prices of Hogs and Hog Products, 1905-36, Bur. Agr. Econ., 1937 (processed) and supplementary unpublished data of United States Production and Marketing Administration, Livestock Branch.



The price received by producers for Good grade beef cattle was estimated by adding to the average price for all beef cattle a premium representing the difference between the market price of Good-grade cattle (steers, heifers, and cows) and the average price of all cattle for slaughter, using weighted averages for 13 of the more important markets. Prices received by farmers for hogs and lambs are generally considered to be directly comparable to retail prices of the products with respect to average quality level, therefore, estimates by grade such as that made for beef were unnecessary.

Farm equivalents of retail weight.--Because 100 pounds of live animal yields considerably less than 100 pounds of meat, the composite retail price per pound cannot be compared directly with the farm price per pound. Equivalents used in computing the farm-to-retail margins for beef and lamb were based on yields of Good-grade animals, and the equivalent for pork on the average yield of 200-220 pound hogs. Equivalents are as follows: Beef, 2.16 pounds farm weight to 1 pound of retail cuts; pork, 1.41 pounds farm weight of hogs to 1 pound of retail pork products; and lamb, 2.16 pounds farm weight to 1 pound of retail cuts. Equivalents for beef and lamb based on all slaughter, used in price spreads for the meat group, differ a little from those used for margins by species.

Byproduct allowance.--Composite retail prices of beef products and lamb products apply only to carcass cuts. Therefore, it was necessary to estimate the portion of the farm value which should be ascribed to the carcass only, for comparison with retail price. The general procedure was to evaluate byproducts and carcass at the wholesale level and to compute carcass value as a percentage of total value. This percentage was then applied to the gross farm value to obtain net farm value used in determining farm-to-retail margins. Byproduct allowances for the meat group was for nonmeat products only.

Weights.--Weights used in combining data for the various species of livestock are 1935-39 average quantities of meat purchased by consumers. These weights were used for both retail prices and farm values because the farm values are values equivalent to one pound of meat at retail.



The first condition is that the value of the function at the origin must be zero. This is satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The second condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The third condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ .

The fourth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The fifth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The sixth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ .

The seventh condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The eighth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The ninth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ .

The tenth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The eleventh condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The twelfth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ .

The thirteenth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The fourteenth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ . The fifteenth condition is that the function must be zero on the boundary of the region. This is also satisfied by the function  $f(x, y, z) = x^2 + y^2 + z^2 - 1$ .





